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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,217	04/01/2004	Nicholas A. J. Millington	PA3445US	7302

22830 7590 01/22/2009

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EXAMINER	
NICKERSON, JEFFREY L	
ART UNIT	PAPER NUMBER
2442	
MAIL DATE	DELIVERY MODE
01/22/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,217	MILLINGTON, NICHOLAS A. J.	
	Examiner	Art Unit	
	JEFFREY NICKERSON	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *577-600* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *577-600* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to Application No. 10/816,217 filed on 01 April 2004 as a non-provisional of Application No. 60/490,768 filed 28 July 2003. The request for continued examination presented on 04 December 2008, which cancels claims 1-6, 9-10, 19-20, 31, 33, 65-66, 86, 91, 109-114, 117-118, 121, 127-128, 138-139, 141, 156, 201-202, 206, 218-219, 221, 229, 233, 244, 549-557, 562-568, and 573-576, and adds claims 577-600, is hereby acknowledged. Claims 577-600 have been examined. The application remains under accelerated examination as per MPEP 708.02 VIII.

Response to Arguments

2. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 577-600 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 577, 590, and 600, these claims make claim to a tightly coupled synchronized playback. Applicant asserts that support for tightly coupled synchronization can be found by the use of the term "simultaneous" throughout their specification and claims, as originally filed. The examiner respectfully disagrees, as the term "simultaneous" has ambiguity (especially in the realm of computing, as nothing is ever truly synchronous on two devices, merely deemed "synchronous" based on arbitrary thresholds of the designer's choosing) and therefore has varying degrees of definition. The term "simultaneous" does not provide for adding any intricacies or concepts surrounding the art of clock synchronization, just the intricacies as disclosed by applicant's specification. If applicant believes there is support for "tightly coupled synchronization" (according to whatever definition applicant has for this phrase, see 112 2nd below), then applicant should clearly define the phrase "tightly coupled synchronization" in their claims and identify supporting sections of their specifications for such a definition.

6. Claims 577-600 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 577, 590, and 600, applicant uses the term “tightly coupled synchrony”. Applicant provides no definition for this term and one of ordinary skill in the art would not understand what it means. Usually events are deemed “synchronous” or “simultaneous” if they occur within some predefined threshold/timeframe. Events are typically determined to be “tightly coupled” if they occur in a shorter timeframe than a “loosely coupled” synchronization scheme. Again, the definitions are usually completely arbitrary and depend on the types of events and environment. The examiner respectfully requests applicant to extrapolate the differences between “loosely coupled synchronization” and “tightly coupled synchronization", and to reference their specification indicating where this defining difference for “tightly coupled” is found. For instance, and with regard to synchronizing clocks, the phrase “loosely coupled” *may* mean that the clocks have only their time offsets converge to zero. Whereas “tightly coupled” clocks may mean that their time offsets, frequency offsets, and phase offsets all converge to zero. Other definitions are possible, however, and, therefore, clarification is required. For purposes of further examination the examiner will consider any attempts at synchrony to be tightly coupled.

Regarding claim 577, applicant appears to be attempting to claim “a plurality of devices in communication via the network, the plurality of devices comprising a source device and one or more playback devices.” See, for instance, the nearly equivalent claim 590. However, as currently written (the source device comprises one of the plurality of

devices; etc), there is ambiguity as to whether the source device is a physical device or just a grouping of physical device(s). The same applies for the playback devices. Clarification is requested and the examiner suggests changing the phrasing to mirror that of claim 590. Further regarding claim 577, the last limitation contains the phrase "with the one or more playback devices". However, there is ambiguity as to whether the "outputting" is the part reflected "with the one or more playback devices" (i.e. the one or more playback devices are outputting the media stream), whether the "tight synchrony" is the part reflected "with the one or more playback devices" (i.e. the media stream is being output by something, and the something is in tight synchrony with the playback devices), or both.

Regarding claims 581 and 582, these claims assert that an additional device, being added to the plurality of devices, is "*the* source device" or "one of *the* one or more playback devices." The examiner believes these phrases should be changed to something similar to "another source device", "another playback device", or "wherein the additional device is a playback or source device". "The source device" is already a part of the plurality of devices (or is one of devices a part of the source device? See 577 rejection above). Further regarding the confusion, how can the source/playback device comprise one of the plurality of devices, which, when a device is added, then comprise the source/playback device? Clarification is required. Again, the examiner believes that the phrase should be "plurality of devices comprising a source and playback devices", not that "playback/source devices each comprising one of the plurality of devices".

Regarding claim 583, this claim contains the limitation “removing a device from the plurality of devices without interrupting the outputting”. With reference to the ambiguity of claim 577, it is unclear whether the uninterrupted output is with respect to the removed device, the system as a whole, or a specific other playback device(s).

Regarding claims 578-580 and 584-589, these claims inherit the indefinite features of their parent claims.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claim 600 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claim 600, this claim makes claim to “a machine readable medium.” A claim directed towards "a machine readable medium, having embodied thereon instructions/program, that when executed causes one or more computers to perform the following:" is **not** statutory, as applicant does not specifically define "machine readable medium" in their specification as being only tangible mediums, and the phrase therefore encompasses non-tangible mediums (such as signal waves over

air or water). A claim directed towards "a machine readable **storage** medium, having embodied thereon instructions/program, that when executed by a processor cause one or more computers to perform the following:" should overcome this rejection.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 577, 580-583, 587-590, 592, 594-598, and 600 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benslimane (“A Multimedia Synchronization Protocol for Multicast Groups”, 2000), and further in view of Mills (“Precision Synchronization of Computer Network Clocks”, 1994).

Regarding claim 590, Benslimane teaches a system for synchronizing media playback, the system comprising:

a plurality of devices configured to be in communication via a network, the plurality of devices comprising a source device and one or more playback devices (Benslimane: abstract);

wherein the source device is configured to transmit a media stream, the media stream comprising a time differential (Benslimane: section 3.1.1, Sync message's delta); and

wherein the one or more playback devices output the media stream in tightly coupled synchrony with the one or more playback devices, the tightly coupled synchrony based on the time differential (Benslimane: section 3.1.1 provides for calculating restitution time based on playback offset differential; section 3.1.2 provides for inter-client synchronization); and

wherein a transmission message is a media stream (Benslimane: abstract).

Benslimane does not teach wherein the transmission message comprises source-clock information related to an independent clock associated with the source device; or

wherein the one or more playback devices are configured to determine the time differential between the independent clock associated with the source device and one or more independent clocks associated with the one or more playback devices based on the source-clock information.

Mills, in a similar field of endeavor, teaches wherein the transmission message comprises source-clock information related to an independent clock associated with the source device (Mills: section 2, specifically pg 3, LHS, last paragraph); and

wherein the one or more playback devices are configured to determine the time differential between the independent clock associated with the source device and one or more independent clocks associated with the playback devices based on the source-

clock information (Mills: pg 3, LHS; section 2.1, specifically pg 3 RHS, last paragraph to start of section 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Mills for transmitting source clock information to enable time offset calculations. The teachings of Mills, when implemented in the Benslimane system, will allow one of ordinary skill in the art to keep the clocks of the transmitter and receiver very tightly synchronized and therefore prevent significant drift or skew in the middle of playback. One of ordinary skill in the art would be motivated to utilize the teachings of Mills in the Benslimane system in order to synchronize the playback of media between clients to a degree unperceivable to the user.

Regarding claim 592, the Benslimane/Mills system teaches wherein the plurality of devices are further configured such that devices can be added and removed from the plurality of devices without interrupting the tightly coupled synchrony (Benslimane: section 4).

Regarding claim 594, the Benslimane/Mills system teaches wherein a clock rate of the one or more independent clocks associated with the one or more playback devices is adjustable (Mills: pg 3, LHS provides for adjustable frequency NCOs; See also section 2.1, paragraphs 1-3).

Regarding claim 595, the Benslimane/Mills system teaches wherein the media stream comprises audio information (Benslimane: abstract).

Regarding claim 596, the Benslimane/Mills system teaches wherein the media stream comprises video information (Benslimane: abstract).

Regarding claim 597, the Benslimane/Mills system teaches wherein the source-clock information comprises a timestamp (Mills: pg 2, RHS, last paragraph).

Regarding claim 598, the Benslimane/Mills system teaches wherein one or more playback devices are operable with one or more of unicast transmission or multicast transmission (Benslimane: abstract).

Regarding claim 577, this method claim contains limitations found within that of claim 590 and the same rationale of rejection is used, where applicable.

Regarding claim 580, this method claim contains limitations found within that of claim 592 and the same rationale of rejection is used, where applicable.

Regarding claim 581, the Benslimane/Mills system teaches wherein the additional device is another source device (Mills: pg 2, Figure 1 provides for nested multicast groups; Benslimane: section 4 provides for adding).

Regarding claim 582, the Benslimane/Mills system teaches wherein the additional device comprises one or more playback devices (Benslimane: section 4).

Regarding claim 583, this method claim contains limitations found within that of claim 592 and the same rationale of rejection is used, where applicable.

Regarding claim 586, this method claim contains limitations found within that of claim 594 and the same rationale of rejection is used, where applicable.

Regarding claim 587, the Benslimane/Mills system teaches wherein determining the time differential is performed periodically (Mills: pg 3 LHS, last paragraph; pg 3, LHS, last paragraph).

Regarding claim 588, the Benslimane/Mills system teaches wherein the transmission of the media stream is performed by a multicast transmission methodology (Benslimane: section 1 provides for point-to-point comm.).

Regarding claim 589, the Benslimane/Mills system teaches wherein receiving the media stream is performed by a multicast transmission methodology (Benslimane: abstract).

Regarding claim 600, this machine readable medium claim contains limitations found within that of claim 590 and the same rationale of rejection is used, where applicable.

11. Claims 578-579, 591, and 599 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benslimane ("A Multimedia Synchronization Protocol for Multicast Groups", 2000), in view of Mills ("Precision Synchronization of Computer Network Clocks", 1994), and in further view of Official Notice.

Regarding claim 591, The Benslimane/Mills system does not teach further comprising controlling one or more of the plurality of devices via a user interface module.

An official notice is taken that such use of user interface modules for controlling devices was well known in the art at the time the invention was made by one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize any known controlling technique including a user interface because it would have enabled practicing the Benslimane/Mills system.

Regarding claim 578, this method claim contains limitations found within that of claim 591 and the same rationale of rejection is used, where applicable.

Regarding claim 579, the Benslimane/Mills system does not teach further comprising providing status information associated with one or more of the plurality of devices.

An official notice is taken that such use of providing status information for aid in awareness of controlled devices was well known in the art at the time the invention was made by one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize any known controlled device awareness technique including a providing status information because it would have enabled practicing the Benslimane/Mills system.

Regarding claim 599, the Benslimane/Mills system teaches tightly coupled synchrony output of a media stream between devices (Benslimane: abstract).

The Benslimane/Mills system does not teach wherein the source device is capable of playback.

An official notice is taken that such use of a source device for playback was well known in the art at the time the invention was made by one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize any known device for playback including the source device because it would have enabled practicing the Benslimane/Mills system.

12. Claims 584-585 and 593 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benslimane ("A Multimedia Synchronization Protocol for Multicast Groups", 2000), in view of Mills ("Precision Synchronization of Computer Network Clocks", 1994), and in further view Powers (US 2004/0203378 A1).

Regarding claim 593, the Benslimane/Mills system does not teach wherein a master device is a source device and a slave device is one or more playback devices (Benslimane: abstract).

The Benslimane/Mills system does not teach wherein a master device is further configured to be converted into one of the one or more slave devices; or

and wherein at least one of the one or more slave devices is further configured to be converted into the master device.

Powers, in a similar field of endeavor, teach wherein a master device is further configured to be converted into one of the one or more slave devices (Powers: [0007] provides for masters handing off master-ship to a slave); or

and wherein at least one of the one or more slave devices is further configured to be converted into the master device (Powers: [0007] provides for a slave being promoted).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Powers for having promotion/demotion scheme for multicast groups. The teachings of Powers, when implemented in the Benslimane/Mills system, will allow one of ordinary skill in the art to promote playback devices to be the source device and demote source devices to mere playback devices. One of ordinary skill in the art would be motivated to utilize the teachings of Powers in the Benslimane/Mills system in order to allow recovery if the source suddenly leaves the

network, or the a playback device is deemed a more capable source device (more processing power, more content, etc).

Regarding claim 584, this method claim contains limitations found within that of claim 593 and the same rationale of rejection is used, where applicable.

Regarding claim 585, the Benslimane/Mills/Powers system teaches wherein the tightly coupled synchrony is uninterrupted (Benslimane: section 4 provides for network group management operations while maintaining synchrony; Powers: [0007] wherein network group management operations are promotion/demotion).

Cited Pertinent Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Johnson (US 6,324,586 B1) discloses synchronizing clocks over a network using a common reference.

b. Sato (US 6,128,318) discloses synchronizing clocks on a master/slave setup using timer offset values.

c. Voth (US 6,199,169, 6,351,821 B1) discloses synchronizing clocks across an entire cluster.

d. Zwack (US 7,372,846 B2) discloses using relative time offset comparisons when synchronizing.

e. Bretl et al ("MPEG2 Tutorial", 2000) discloses how to synchronize (time, frequency, and phase) a transmitter STC with a receiver STC in the mpeg system using a PLL, and briefly discusses convergence time considerations when designing the PLL.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY NICKERSON whose telephone number is (571)270-3631. The examiner can normally be reached on M-Th, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. N./
Jeffrey Nickerson
Examiner, Art Unit 2442

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2442